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(54) Title: PHOTORESIST COMPOSITION FOR DEEP ULTRAVIOLET LITHOGRAPHY COMPRISING A MIXTURE OF PHOTOACTIVE COMPOUNDS

(57) Abstract: The present invention relates to a novel photoresist composition that can be developed with an aqueous alkaline solution, and is capable of being imaged at exposure wavelengths in the deep ultraviolet. The invention also relates to a process for imaging the novel photoresist as well as novel photoacid generators.

## INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
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According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G03F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 033 624 A (CLARIANT INTERNATIONAL LTD.) 6 September 2000 (2000-09-06) page 9, line 1 - line 14 page 21, line 35 - line 50 page 23; example 102 page 58, line 25	1-23
X	EP 1 045 290 A (JSR CORPORATION) 18 October 2000 (2000-10-18) page 6, line 55 - line 56	15-17
X	US 5 021 197 A (M. TAKEDA ET AL.) 4 June 1991 (1991-06-04) column 8; example 16	15-17
X	EP 0 877 293 A (FUJI PHOTO FILM CO., LTD.) 11 November 1998 (1998-11-11) page 37, line 15 - line 32	15
-/-		

☒ Further documents are listed in the continuation of box C.

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International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 648 196 A (J.M.J. FRÉCHET ET AL.) 15 July 1997 (1997-07-15) column 9 -column 10; table 1	15
X	EP 0 502 382 A (SHIPLEY COMPANY INC.) 21 February 1992 (1992-02-21) page 4, line 31	15
X	G.A. OLAH, E.G. MELBY: "Onium Ions: Alkylarylhalonium Ions" JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol. 94, no. 17, 23 August 1972 (1972-08-23), pages 6220-6221, XP002265156 USA page 6221; table I	15
X	JP 10 048814 A (JAPAN SYNTHETIC RUBBER CO., LTD.) 20 February 1998 (1998-02-20) page 14, column 1	15
X	JP 08 027094 A (NIPPON GOSEI GOMU K.K. ) 30 January 1996 (1996-01-30) page 5, paragraph 27 page 7, paragraphs 41,42	15
A	EP 1 085 377 A (SHIN-ETSU CHEMICAL CO., LTD.) 21 March 2001 (2001-03-21) cited in the application page 5, line 20 - line 30 page 10, paragraph 47 page 25, line 30 - line 40	1-23

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/06139

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1033624	A	06-09-2000	EP 1033624 A1	06-09-2000
			US 6358665 B1	19-03-2002
			CN 1274433 T	22-11-2000
			WO 0008525 A1	17-02-2000
EP 1045290	A	18-10-2000	JP 2000356854 A	26-12-2000
			EP 1045290 A2	18-10-2000
			US 6576393 B1	10-06-2003
US 5021197	A	04-06-1991	JP 2200664 A	08-08-1990
			DE 68903299 D1	03-12-1992
			DE 68903299 T2	04-03-1993
			EP 0346756 A1	20-12-1989
EP 0877293	A	11-11-1998	JP 10307397 A	17-11-1998
			JP 10307398 A	17-11-1998
			EP 0877293 A2	11-11-1998
			US 6479209 B1	12-11-2002
US 5648196	A	15-07-1997	NONE	
EP 0502382	A	09-09-1992	US 5206116 A	27-04-1993
			US 5312715 A	17-05-1994
			DE 502382 T1	14-01-1993
			EP 0502382 A1	09-09-1992
			JP 5273753 A	22-10-1993
			US 5397685 A	14-03-1995
JP 10048814	A	20-02-1998	NONE	
JP 8027094	A	30-01-1996	NONE	
EP 1085377	A	21-03-2001	JP 2001083695 A	30-03-2001
			EP 1085377 A1	21-03-2001
			US 6420085 B1	16-07-2002

Form PCT/ISA/210 (patent family annex) (July 1992)